DEPARTMENT OF DEFENSE

HIGH PERFORMANCE COMPUTING MODERNIZATION PROGRAM

FY 2004 RESOURCE ALLOCATION

IMPLEMENTATION PLAN

JANUARY 2003

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1. INTRODUCTION

This plan documents actions required for the FY 2004 implementation of resource allocations on DoD High Performance Computing Modernization Program (HPCMP) high performance computing (HPC) systems. This implementation plan provides details for implementing resource allocations as described in the *DoD High Performance Computing Modernization Program Resource Allocation Policy*, January 2002. Recommendations from the HPC Advisory Panel (HPCAP) and the User Advocacy Group (UAG) were considered when preparing the implementation guidelines.

The DoD resource allocation policy is intended to accomplish four goals:

- allocate HPC resources in a manner that maximizes benefit to DoD's science and technology (S&T) and test and evaluation (T&E) communities;
- ensure that DoD's most important work gets done in a timely manner;
- provide increased productivity of our most important resource—the scientist and engineer —by ensuring HPC resources are available; and
- foster innovative use of HPC.

Allocation of computational time on HPCMP resources will be made at the following three levels**:**

1. Large computationally-intensive projects (DoD Challenge Projects) that are recommended by the DoD Challenge Board, selected by the HPCMP Director, and approved by the Deputy Undersecretary of Defense for Science and Technology [DUSD(S&T)].
2. Other projects that are determined by individual Service/Agency processes. These projects are termed DoD Service/Agency computational projects.
3. Projects supporting real-time DoD Service/Agency computational projects selected in the annual distributed center (DC) selection process and approved by the DUSD(S&T).

Approximately 25% of total computational resources will be allocated to DoD Challenge Projects. The remaining resources, including a reasonable over-allocation to allow over-subscription that ensures efficient utilization, will be allocated to Service/Agency computational projects (including those that run in high priority mode, although additional resources may be allocated as needed). Both DoD Challenge Project and Service/Agency computational project allocation processes are addressed in this document.

All projects will be evaluated against the following criteria:

- DoD mission priority,
- Military advantage gained by exploiting HPC,
- Scientific merit of the proposed project,
- Computational merit of the proposed project,
- Potential for significant progress, and
- Appropriateness of requested resources for the proposed project.

The HPCMP instituted DoD Challenge Projects in FY 1997 and Service/Agency computational projects allocations in FY 1998. In FY 2002, all HPC systems that are not classified above the secret level at the major shared resource centers (MSRCs) and the larger systems at selected distributed centers – called allocated distributed centers (ADCs: Maui High Performance Computing Center (MHPCC), the Army High Performance Computing Research Center (AHPCRC), and the Arctic Region Supercomputer Center (ARSC)) – were placed under Service/Agency and DoD Challenge Project allocation.

2. SCOPE

This FY 2003 plan continues the DoD Challenge Project proposal process and implements the allocation process on all major computational systems at the MSRCs and allocated distributed centers. This represents no change from the FY 2003 alloation process.

3. GENERAL POLICIES

Computational resources provided by the HPCMP are generally available to DoD's S&T and T&E programs under the cognizance of DUSD(S&T) and the Director, Operational Test and Evaluation (DOT&E), respectively. Eligible users include both government laboratory and test center personnel as well as on-site and off-site contractors of those organizations. Each Service/Agency has discretion to grant a portion of its allocation to S&T and T&E-related work within its own organization through identified computational projects. On each HPCMP system, only valid Service/Agency computational projects or DoD Challenge Projects will be granted accounts (other than administrative or special accounts). Foreground computational work on allocated systems will only be available to project accounts with allocations on those systems, as well as administrative and special accounts. Background work on allocated systems is available for all projects, as well as administrative and special accounts.

The resources available for Service/Agency computational projects will initially be divided according to the existing Service/Agency standard allocation (30% Army, 30% Navy, 30% Air Force, and 10% Agencies resource division) across all systems, except for those cases in which a Service's or Agency's total documented requirements can be met without providing their full

standard allocation. Although the overall division of resources will be according to the Service/Agency standard allocation, this does not preclude unequal initial allocations on specific systems where indicated by requirements and prior usage on these systems. Each Service/Agency will distribute its HPC allocation for Service/Agency computational projects among the organizations within its cognizance. The HPCMP Office (HPCMPO), in consultation with the HPCAP, reserves the right to reallocate HPC resources during FY 2003 in response to changing requirements and actual utilization.

Utilization of classified HPC resources requires a number of administrative procedures involving both the user organization's and the SRC's security offices. In addition, network encryption capabilities must be planned and obtained from the HPCMP Defense Research and Engineering Network (DREN) project manager. It is essential that both of these aspects of classified computing be addressed before a Service or Agency provides an FY 2003 allocation on any SRC classified system so that there will be a reasonable expectation that the allocation will be used in a timely fashion.

The high-priority Service/Agency job activity results from the need to address two kinds of priority jobs: **high-priority jobs**, time-critical jobs that occur on a regular or recurring basis; and **urgent jobs**, time-critical jobs for which the time criticality is not known in advance. A good example of a high-priority job is a recurrent requirement for computer resources during a live weapons systems testing period such that a short turnaround time is required to process data resulting from that test that will directly affect the conduct of the next test. An urgent job example is a single time-sensitive event that results from some unexpected need that requires faster-than-normal turnaround on computational resources that can only be accomplished with special handling.

High-priority Service/Agency computational work will be implemented through an allocation of priority hours available to each Service/Agency. The support mechanisms and priority structures that the SRCs use to support DoD Challenge Projects should also be applied to these high-priority Service/Agency jobs. This will ensure that the priority received by high-priority Service/Agency computational work will be the same as that given to DoD Challenge Projects.

The resources targeted for high-priority Service/Agency computational work will initially be divided among the Services/Agencies in the same way as standard Service/Agency allocations are made (30% Army, 30% Navy, 30% Air Force, and 10% Agencies resource division) on all systems on which high-priority Service/Agency jobs are implemented. Each Service/Agency will allocate its available high-priority Service/Agency allocation to computational projects within its cognizance for computational work that requires such priority.

Requests for urgent processing will continue to be handled with *ad hoc* mechanisms currently in place at the HPC centers. The user (through the project leader, S/AAA, and Service/Agency principal) will request approval for urgent processing from the HPCMP director. Upon approval, the HPCMPO will contact the center to arrange for the support necessary to handle the one-time, urgent computational requirement. If the same computational project repeatedly generates

requests for urgent jobs, consideration should be given by its Service/Agency to transition those jobs to the class of high-priority Service/Agency. Urgent computational usage must be covered by an allocation.

All Service/Agency allocations will be determined and reported at the computational project level. As is the case with DoD Challenge Projects, all Service/Agency allocations must be identified with a valid computational project. Account applications are allowed at either the computational project or sub-project level, and organizations may make suballocations of all Service/Agency allocations at the sub-project level. The HPC centers will report Service/Agency usage (necessary to compare with allocations) and current Service/Agency allocations to the HPCMPO through the program's Information Environment (IE) at the computational project level, but Service/Agency usage will be available to user organizations at the sub-project and/or user level *via* reports from IE.

In addition to the allocation processes for DoD Challenge Projects and Service/Agency level allocations, procedures will be implemented to provide nominal HPC resources to users *via* a special non-allocated account, called a special account. Special accounts may be created for development and testing of Common HPC Software Support Initiative (CHSSI) projects, benchmarking of codes, determination of the suitability of a particular architecture for a given application, and other non-production activities. These special accounts will be implemented at each center independent of the Service/Agency allocation process. Special accounts for users at existing HPCMP user sites will be made only with the concurrence of the appropriate S/AAA for that organization. Only the cognizant computational technology area (CTA) leader, CHSSI portfolio leader, or HPCMPO authorized personnel can authorize access to HPC resources for CHSSI projects. Usage of resources in these special accounts will be closely monitored by the HPCMPO. A large amount of usage is not expected, since "production" computational work should be done within standard computational projects as allocated by the Services and Agencies.

A reasonable over-allocation on each system is desired to promote optimal utilization. This over-allocation will be accomplished by assigning total allocations, for all types of projects, in processor hours on each system, up to the theoretical maximum number of processor hours available on each system. On a yearly basis, this equates to 8,760 (the number of hours in a year) times the number of processors available on that system. The actual number of processor hours delivered by each system will be somewhat less than this theoretical maximum due to scheduled maintenance time, inefficiencies in delivering processor hours, operating system overhead, and utilization in special non-allocated accounts. The centers' ability to deliver processor hours efficiently has grown over time. For FY 2004, we anticipate the "effective availability" of cycles to be approximately 80 percent of the theoretical maximum. The HPCMPO may allow each Service/Agency to establish collective allocations on a group of like-architecture HPC systems at one or more centers where accounting procedures are in place to keep track of utilization on each individual system and aggregate utilization on the group of systems so that collective allocations can be compared with aggregate utilization. Although current allocations of HPCMP resources are provided and tracked exclusively as processor hours on each system, optimum use of HPC resources and future HPCMP activities, such as

metacomputing, may require allocations of system memory, mass storage, and wide-area networking bandwidth.

DoD Service/Agency computational projects may have different types of accounts and may run at different priorities. The typical account allows a user to run his jobs in the foreground at standard priority. The project may also have a background account that allows a user to run his computations in the background and not impact allocations on that system. Background usage will have a lower priority than foreground usage and background usage should have minimal effect on foreground usage. Finally, a computational project may have a background-only account. This type of account is established if a valid computational project does not have time allocated on that system and is run at the lowest (background) priority. All foreground and background usage will be tracked by project and reported to IE.

4. PROCEDURES

The major steps in the HPC resources allocation process for FY 2004 are presented in chronological order in the following subsections. These steps are captured in the time-line schedule in section 6.

4.1 THE HPCMPO, IN CONSULTATION WITH THE PARTICIPATING HPC CENTERS AND THE HPC ADVISORY PANEL, DETERMINES THE SET OF HPC RESOURCES TO BE ALLOCATED FOR CHALLENGE PROJECTS AND SERVICE/AGENCY COMPUTATIONAL PROJECTS

The HPCMPO will request from the HPC centers their recommendations on the set of HPC resources to be made available for allocation. These resources will include HPC systems available for use between 1 October 2003 and 30 September 2004. For those systems which are expected to become available after 1 October 2003, an estimate of the available date will be included. The HPCMPO and HPCAP will review the recommendations from the participating HPC centers and finalize the set of resources to be reserved for Challenge Projects and the set of resources to be allocated to Service/Agency computational projects. The process for determining the actual number of hours to be made available for DoD Challenge Projects and Service/Agency projects will be described in step 4.11.

4.2 THE HPCMPO RELEASES A CALL FOR NEW DOD CHALLENGE PROJECT PROPOSALS AND REQUESTS FOR ALLOCATIONS FOR CONTINUING DOD CHALLENGE PROJECTS

The HPCMPO will solicit proposals for new DoD Challenge Projects. To ensure that this solicitation receives wide distribution, the HPCMPO will:

- Prepare a formal memorandum from the Director, HPCMP, to the HPCAP informing them of the call for proposals. The HPCAP principals will also be asked to prioritize their projects prior to submission to the HPCMPO.
- Place a copy of the announcement, including the call for proposals, on the HPCMP Web page under "New."
- E-mail an informal announcement, including the call for proposals, to a selected HPCMP distribution.

The call for proposals will include the allocation criteria, description of the DoD Challenge Projects submission and selection process, and a detailed proposal format. This call will also request that each Service/Agency provide requests for FY 2004 allocations for its continuing DoD Challenge Projects.

4.3 THE SERVICES/AGENCIES PROVIDE AN UPDATE OF THEIR HPC REQUIREMENTS

The HPCMPO will open the HPC requirements database *via* the Web (http://www.hpcmo.hpc.mil/Htdocs/Require/index.html) for Service/Agency computational project leaders to update their HPC requirements for FY 2004 and beyond. These updated HPC requirements will include requirements for both proposed DoD Challenge Projects and Service/Agency computational projects.

In response to the 128-bit encrypted requirements questionnaire, the project leaders will provide computing and overall performance requirements (real time and non- real time), data archival requirements, software requirements, networking requirements, and training requirements along with the project details such as number of HPC users working on the project, the predominant RDT&E category of the project, and a concise project description. The requirements database will remain open to the project leaders for approximately one and a half months and will remain open for an additional two weeks for review and corrections by the S/AAAs.

4.4 THE SERVICES/AGENCIES PROVIDE DOD CHALLENGE PROJECT PROPOSALS FOR NEW FY 2004 PROJECTS AND REQUESTS FOR ALLOCATIONS FOR CONTINUING DOD CHALLENGE PROJECTS

The prioritized set of DoD Challenge Project proposals from each Service/Agency are provided to the HPCMPO, through the HPCAP, along with their Service/Agency priorities. In addition, each Service/Agency submits requests for FY 2004 allocations for its ongoing DoD Challenge Projects.

4.5 THE HPCMPO REQUESTS VALIDATION OF HPC REQUIREMENTS

The HPCMPO will send a memorandum to the Services/Agencies requesting formal validation of the HPC requirements that have just been updated through the requirements update process.

4.6 THE HPCMPO CONDUCTS AN EVALUATION OF NEW DOD CHALLENGE PROJECT PROPOSALS AND AN ASSESSMENT OF PROGRESS FOR CONTINUING DOD CHALLENGE PROJECTS

The HPCMPO will conduct an initial analysis of all DoD Challenge proposals received. This will include verification of proposed requirements versus requirements listed in the HPC requirements database. In preparation for consideration by the DoD Challenge Board (which consists of the HPCAP and external reviewers), the HPCMPO will also conduct preliminary analyses concerning the resources requested in the proposals, such as:

- Total requested resources vs. available resources,
- Individual proposal requested resources vs. available resources, and
- Categorization by CTA.

The DoD Challenge Board will evaluate the proposals based on the technical criteria outlined in the call for proposals. Each proposal will be reviewed by a minimum of three external reviewers. After initial review, each external reviewer may request clarification in writing from any proposer. After receipt of this written clarification, a written review from each reviewer will be sent to the HPCMPO. These reviews will be organized and made available to all Board members at, or prior to, the Board meeting.

The DoD Challenge Board will meet and discuss the technical merits of each proposal. A consensus technical score will be assigned to each proposal during the meeting.

A Service/Agency priority score will also be provided by the Service/Agencies for each new DoD Challenge Project. These scores will be rescaled for uniformity among Service/Agency scores. The technical score and rescaled scores will be combined to provide an overall score and ranking. The selection and allocation will be made based on this ranking.

A subset of the DoD Challenge Board will review the progress of continuing DoD Challenge Projects. The reviewers will use both written progress reports provided by the Services/Agencies at the time of new proposal submission and oral presentations at the annual DoD Users Group Conference. The reviewers will make recommendations on continuation of these DoD Challenge Projects into FY 2004, including allocation levels.

4.7 The Services/Agencies Provide a Final Validation of Their HPC Requirements

The Services/Agencies validate the requirements reported to the HPCMPO as part of the requirements update process.

4.8 FY 2004 DoD Challenge Projects are Selected

The HPCMPO develops recommendations for FY 2004 DoD Challenge Projects based on the technical evaluations rendered by the DoD Challenge Board and the Service/Agency priorities provided at the time of proposal submission. The HPCMP Director then reviews the Challenge Board recommendations and works with DUSD(S&T) to select the FY2004 DoD Challenge Projects. The HPCMPO also develops recommendations of allocations for continuing Challenge Projects. The HPCMP Director then reviews the recommendations and approves allocations for the new and continuing Challenge Projects.

4.9 The HPCMP Director Announces the Selection of FY 2004 DoD Challenge Projects

The HPCMP Director announces the selection of new FY 2004 DoD Challenge Projects to the Services/Agencies and the participating HPC centers after approval. More detailed information is provided by the HPCMPO, including new and continuing FY 2004 DoD Challenge Projects with allocations to each project.

4.10 The HPCMPO Provides a Consolidated Requirements, Utilization, and Allocation Report to the Services/Agencies

The HPCMPO will produce a report that consolidates, by project, requirements, utilization, and allocations. The requirements will be those requirements gathered from each project as part of the yearly requirement update process. The total year-to-date utilization will be reported, by project, on all of the HPCMP's allocated systems. The allocation data will be the data provided to the HPCMPO at the initiation of the FY 2003 allocation process as well as the current set of allocation data as provided by the centers.

4.11 The HPCMPO Provides Total Hours Available to Each Service/Agency for Both High-Priority Service/Agency Projects as an Overall Total

AND STANDARD SERVICE/AGENCY PROJECTS ON EACH HPC SYSTEM AND REQUESTS SERVICE/AGENCY ALLOCATIONS ON THOSE SYSTEMS

The HPCMPO will validate the number of available hours for allocation from the HPC centers for each of their available HPC systems for FY 2004 and request each center's recommendation for total Challenge Project allocations on each of its systems. The HPCMPO then receives these Challenge allocation recommendation hours from each center that has allocated resources. The HPCMPO will inform each Service/Agency of the total HPC resources available for allocation by that Service/Agency on a system-by-system or collective like-architecture basis. Each HPC resource will be allocated according to the Service/Agency standard allocation, except for special cases noted in Section 3. Any resources not to be used for DoD Challenge Projects will be made available for Service/Agency allocations, including both high-priority and standard computational work. High-priority allocations will be made to each Service/Agency as an overall total number of Service/Agency computational hours that can be designated during FY 2004 as high priority on any HPCMP-allocated system. Provisions will be made for the Service/Agency principals on the HPCAP to trade allocations as appropriate. The Services/Agencies will be asked to provide FY 2004 Service/Agency allocations for their Service/Agency computational projects identified and validated in the requirement process.

4.12 THE SERVICES/AGENCIES MAKE FY 2004 SERVICE/AGENCY ALLOCATIONS

Each Service/Agency uses internal allocation processes to determine allocations for each validated computational project. In determining computational project allocations, the Services/Agencies may use computational project requirements, computational project utilization, and any other information they deem appropriate. Total allocations for each Service/Agency on each system will equal the number of processor hours provided to that Service/Agency by the HPCMPO. Each Service/Agency then provides its computational project allocations on each HPC system or collection of like-architecture systems using IE. The HPCMPO will ensure that each HPC center will receive Service/Agency allocations by system or architecture type in a timely fashion.

4.13 FY 2004 DOD CHALLENGE PROJECTS AND SERVICE/AGENCY ALLOCATIONS ARE IMPLEMENTED BY THE PARTICIPATING HPC CENTERS

The HPC centers will then implement the mechanisms to allocate appropriate resources and establish active accounts for each DoD Challenge Project and each Service/Agency computational project beginning 1 October 2003. These mechanisms will ensure that only approved computational project accounts are provided HPC resources, except for special accounts discussed earlier in this document.

5. OPERATIONAL POLICIES

Each participating HPC center will follow the operational policies to ensure successful implementation of this plan.

5.1 PRIORITY STRUCTURE

Eligible users may run in foreground (standard, high, debug, or urgent) or background (low) priority. The background priority is generally implemented with a background queue (or queue structure). This background utilization will not count against that project's allocation. Use of this priority is optional for projects with remaining allocations; however, it is required for projects that have exhausted their allocations or never had an allocation. Background usage will be at a lower priority than the foreground usage and should have a minimal effect on usage in the foreground.

5.2 SYSTEM/ACCOUNTING TOOLS

System/accounting tools will be provided by IE and the centers to report project or sub-project allocation(s) used to date, and the allocation(s) remaining, to user organizations. Accounting files will be updated daily and will be accessible by project users and the S/AAAs. Warning notices will be provided at system login to users when their project or sub-project has less than 10% of its allocation remaining.

HPC systems are fully allocated to the maximum amount possible and there are allocated hours that cannot be delivered. This is done with the assumption that some allocated resources will not be requested. It is possible that large numbers of users will attempt to use their allocated resources near the end of the allocation year. The best way to avoid this situation is to encourage uniform usage throughout the year. To this end, users will be informed of the "over-allocation factor" of the system. The over-allocation factor is defined as the number of allocated CPU hours which have not been used, divided by the maximum theoretical hours remaining in the year. The over-allocation factor is 1.0 at the beginning of the allocation year and will naturally increase as the year progresses due to system down time and other system inefficiencies. If large numbers of allocated hours are not used (saved by users) the over-allocation factor will increase more rapidly. A high over-allocation factor indicates that a large number of allocated hours will not be delivered to users. The HPCMPO reserves the right to readjust allocations if the over-allocation factor gets too large.

Each center will develop and use the actual tools needed to implement the allocations. IE will ensure that the interface with individual users will be consistent among centers. Tool development and implementation will continue to be coordinated with the UAG, which will serve as the voice of the DoD HPCMP user community. The centers will ensure that allocations are enforced properly with a reasonable turnaround time for authorized users (except possibly for background users).

5.3 HIGH-PRIORITY SERVICE/AGENCY ACCOUNTS

High-priority Service/Agency accounts are created when requested by the S/AAA and approved by the Service/Agency HPCAP principal and the HPCMPO. The allocation provided to a computational project will essentially convert some or all of that project's standard Service/Agency allocation to high-priority status. Even though the conversion is being made from standard Service/Agency allocations, the total Service/Agency allocation will have already been adjusted to include approximately five percent of the total high-priority allocation, which includes both Challenge Project and high-priority Service/Agency allocations. Since the high-priority allocation is being provided to a computational project which already has an account at the HPC center, a new account request is not necessary. The request e-mail from the S/AAA and approval e-mail from the HPCAP principal will be forwarded to the HPCMPO (require@hpcmo.hpc.mil) stating the amount of high-priority allocation that is to be transferred from the Service/Agency computational project allocation to the high-priority account that is being activated. The HPCMPO will check to ensure that the Service/Agency does not exceed its high-priority program-wide allocation and will then forward the approved request to the center. Each validated Service/Agency computational project may have ongoing work in one or more of the five priority classes of work (urgent, debug, high-priority, standard, and background).

Each HPC center will work directly with each computational project leader who is allocated high-priority resources by its Service/Agency to obtain detailed resource requirements for timely support for that high-priority work. Each Service/Agency is requested to judiciously limit the number of its computional projects to which it allocates high-priority resources. Careful limitation of access by only its most deserving projects to these high-priority resources will decrease significantly the additional administrative work that the HPC centers will have to perform in order to effectively serve the truly high-priority Service/Agency computational workload in addition to DoD Challenge Project support. The HPCMPO reserves the right to place restrictions on the number and size of high-priority Service/Agency allocations if the administrative burden on its centers becomes too great.

5.4 S/AAA ROLE

The role of the S/AAA is crucial to the efficient operation of the allocation process. S/AAAs are authorized to make allocations for projects and approve user accounts. The HPCMPO will ensure that adequate documentation and training for the system accounting tools are available to the S/AAAs as the tools are developed and implemented.

5.5 ADJUSTMENTS TO ALLOCATIONS

Allocations may be adjusted at any time during the fiscal year. Trades of resources may be made at three levels: within a Service/Agency organization, between Service/Agency organizations, or between Services/Agencies. Allocations may also be adjusted to reflect new systems, high priority or urgent projects or extended system non-availability. Each of these will be discussed below. The HPCMPO conducts a separate re-allocation of DoD Challenge Project resources at

least twice each year. DoD Challenge Project resources are not subject to trades within or among the Services/Agencies. No HPC center is allowed to adjust either individual project or subproject allocations or the total allocation on any of its HPC systems without being requested to do so through the re-allocation processes described in this plan, or by direction of the HPCMPO.

5.5.1 Project Level Exchanges

Each organization will be able to adjust its allocations as frequently as the system accounting tools allow. The HPC centers and IE will implement tools allowing daily adjustments to allocations. Each organization is responsible for allowing for new starts and shifting resources within the organization to accomplish this. Organizations should not expect to receive additional allocations from the HPCMPO. The S/AAA is the only individual authorized to adjust allocations for projects within an organization.

The sum of all allocations within an organization must equal that organization's total allocation. Each organization will have a special requirements project number, to be provided for each organization by the HPCMPO, as a reserve account, for use as a bookkeeping device. This may be used to allow flexibility for new accounts or to adjust other project allocations. There will be no utilization by the reserve accounts.

5.5.2 Organizational Level Exchanges

Organizations may trade allocations. Once the respective S/AAAs agree to the exchange, one of them will contact the HPC center manager(s) to notify them of the exchange. The center manager(s) will effect the exchange upon receipt of a confirming message from the second S/AAA. The center manager(s) will notify the appropriate HPCAP principal. These notifications will be coordinated through IE.

5.5.3 Service/Agency Exchanges

Resources may be exchanged among Services and Agencies. It is the intent of the HPCMPO to maintain a high level of joint Service/Agency utilization of resources at each center rather than have an HPC resource dedicated to a specific Service or Agency. This is to encourage collaboration between the scientists and engineers within the various Services and Agencies. The exchange must be approved by both Service/Agency HPCAP principals. Upon approval by both HPCAP members, the S/AAAs will initiate the exchange process as outlined in Section 5.5.2.

5.5.4 New Resources

In the event there is an introduction of new HPC resources that were not included in the original allocation, those resources will be allocated according to the standard Service/Agency allocation.

The HPCMPO will consult with the HPCAP to determine an appropriate schedule to ensure an efficient allocation of those new resources by project or sub-project.

5.5.5 Urgent Projects

The HPCMPO has implemented a procedure to support unexpected, urgent high-priority projects. The appropriate HPCAP principal is expected to make resource adjustments within the Service/Agency allocation. In some instances, it may be necessary to obtain the concurrence of other HPCAP principals to reallocate among the Services/Agencies when the project cannot be supported within the individual Service/Agency allocation. Once the HPCAP Principal designates a project as urgent and has identified allocations to support it, the request for urgent status is sent to the HPCMP director. The director may consult with other Service/Agency HPCAP principals if the urgent project is likely to impact other computational work. If approved by the director, the HPCMPO notifies the appropriate HPC center of the urgent status and the allocation for the project. Urgent computational work will be run at the highest priority.

5.5.6 Excessive System Downtime

In the event that an HPC resource becomes unavailable for extended periods of time, including disasters, the HPCMPO reserves the right to pro-rate down time against all users' allocations. In the event that users must be transferred to other HPC resources, allocations on that resource will be reduced *pro rata*. If conditions permit, affected S/AAAs and HPCAP principals will be consulted.

6. SCHEDULE

Date	Activity
2 January 2003	HPCMPO requests available HPC resources from HPC centers (4.1)
16 January 2003	HPCMPO finalizes the set of resources to be offered for Challenge Projects, high-priority Service/Agency work, and standard Service/Agency computational projects (4.1)
17 January 2003	HPCMPO issues call for FY 2004 DoD Challenge Projects and request for FY 2004 allocations for continuing DoD Challenge Projects (4.2)
10 March 2003	HPCMPO opens requirements database for updating HPC requirements via the Web (4.3)
28 March 2003	New FY 2004 DoD Challenge Project proposals due to HPCMPO (4.4) Requests for FY 2004 allocations for continuing DoD Challenge Projects due to HPCMPO (4.4)
18 April 2003	HPCMPO closes requirements database to Project Leaders (4.3)
23 April 2003	HPCMPO requests written clarifications from Challenge Project proposers (4.6)
30 April 2003	HPCMPO closes requirements database to S/AAAs (4.3)
2 May 2003	Challenge Project proposers provide written clarifications to HPCMPO (4.6)
9 May 2003	HPCMPO requests total Challenge Project allocation recommendations from HPC centers (4.11)
9 May 2003	HPCMPO requests validation of HPC requirements from Services/Agencies (4.5)
28-29 May 2003	HPCMPO conducts technical evaluation of new DoD Challenge Project proposals (4.6)
30 May 2003	HPCMPO receives Challenge Project allocation recommendations from HPC centers (4.11)
11-12 June 2003	HPCMPO conducts an assessment of progress for continuing DoD Challenge Projects (4.6)
16 June 2003	Services/Agencies provide a final validation of their HPC requirements (4.7)

Date	Activity
27 June 2003	HPCMP Director, after reviewing the Challenge Board recommendations, works with the DUSD(S&T) to select the FY 2004 DoD Challenge Projects (4.8)
11 July 2003	HPCMPO provides a consolidated requirements, utilization, and allocation report to the Services/Agencies (4.10)
	HPCMPO provides total hours available to each Service/Agency on each HPC system and allocations for FY2004 (4.11)
	HPCMPO provides total high-priority hours available to each Service/Agency on a program-wide basis (4.11)
	HPCMPO requests Service/Agency allocations for FY 2004 (4.11)
11 July 2003	The HPCMP Director announces the selection of new and continuing FY 2004 DoD Challenge Projects (4.9)
1 August 2003	Services/Agencies complete FY 2004 Service/Agency allocations (4.12)
8 August 2003	HPCMPO ensures that FY 2004 Service/Agency allocations are available to HPC centers (4.12)
1 October 2003	Participating HPC centers implement FY 2004 DoD Challenge Projects and Service/Agency allocations (4.13)